

# RAD IQ™ RI 1000

## Radiation Imaging

Gamma imaging is of great interest in surveying of radiological environments, especially nuclear power plants for applications such as the preparation of an intervention in a hot-cell or to help towards the decommissioning of nuclear facilities.

Nucare provides patent pending solution that employs deconvolution based image reconstruction algorithm which enables superior sensitivity and high spatial resolution simultaneously.

The detector is consist of a single block of sodium iodide scintillator optically coupled to a photomultiplier tube. This assembly is located within a, so called, flat field of view collimator which allows only incidences within acceptance angle. The unit also contains a high resolution CCD camera.

The whole system is mounted on a pan and tilt unit and is operated from a remote PC via a single cable which can be in excess of 100 meters long. This can lead to a considerable saving of radiation dose received by the intervening personnel as well as reduction of the intervention time and cost.



Optional wall-mount

RAD IQ™ RI1000

### Key features

- High sensitivity and high spatial resolution
- 24/7 survey from a remote location with zero dose exposure by an operator
- Pseudo 3D imaging by two orthogonal measurements

### Applications

- Gamma imaging of any radiological environments
- Dose rate mapping in preparation of monitoring or decommissioning of nuclear facilities
- Nuclear waste management
- NPP reactor gamma imaging
- Homeland security

### System description

1	CCD camera	2	Detector module
3	Pan & Tilt unit	4	Heavy duty tripod

## Key Specifications

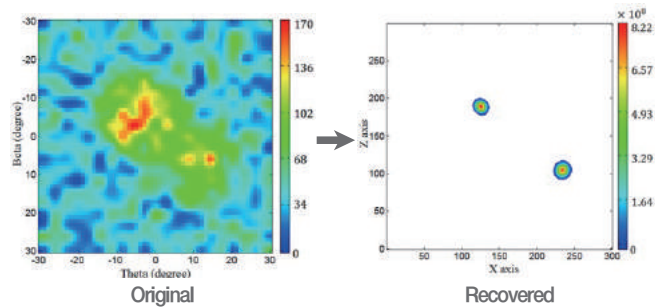
Detector (Gamma)	NaI(Tl) (2×2 inch) (typical)		Communication	RJ-45 Ethernet	
Energy range	20 – 3,000 keV		Energy resolution	7 ± 1% @662 keV	
Power	PoE compliant (to 802.2a) or 5V DC adaptor		Collimator thickness	5mm (typical)	
Digital MCA	32 bit RISC, ARM® Cortex™-M3		Operating temperature	-15°C(5°F)-50°C(122°F)	
Imaging FOV	± 30 ° (typical), adjustable		Imaging distance	1 – 10m (typical)	
Dimension	560(W)×213(D)×488(H) mm		Weight	38kg (84 lb)	
Tripod (optional item)	Max height	1291mm	CCD	Max resolution	H : 640 px, V : 480 px
	Max radius	Ø1425		Max frame rate	120 fps
	Weight	11kg (24 lb)		Pixel size	H : 5.6 μm, V : 5.6 μm

## Unique features

Our patent pending 'resolution recovery' algorithm make it possible to recover degradation of spatial resolution caused by the flat field of view collimation which is employed for effective collimation for high energy isotopes and maximizing sensitivity. In addition, pseudo-3D imaging can be provided for localization of hot spots in 3D volume by minimum of two angular projections measured at orthogonal positions.



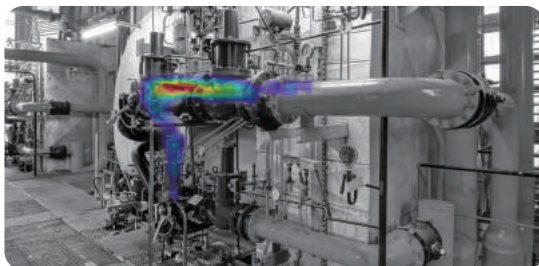
Pseudo 3D imaging



Resolution recovery

## Application example

Its application includes: monitoring of maintenance and decontamination operations, initial dose rate mapping in preparation of maintenance or dismantling scenarios, localization of hot spots in pipeline, nuclear waste management, NPP field survey and more.



Dose rate mapping



Area survey